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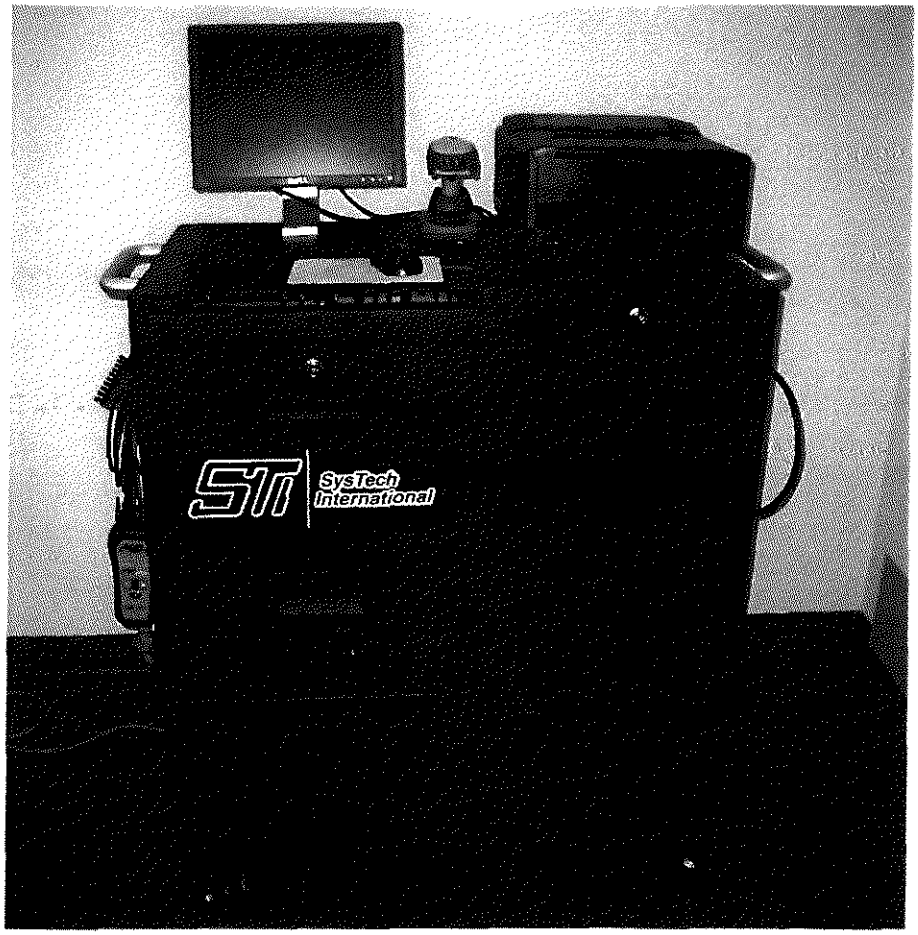
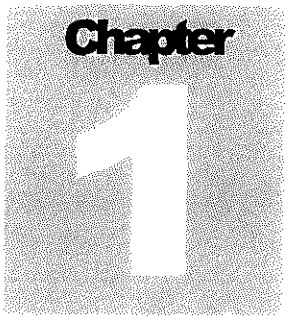
Rhode Island Vehicle Inspection Program



Operator's Manual



Chapter 1 RI2008 Overview

Welcome to the State of Rhode Island's Motor Vehicle Emissions Inspection program. The purpose of the emissions inspection program is to protect Rhode Island's air quality by reducing the amount of harmful pollutants released by motor vehicles. To accomplish this goal, the Rhode Island Department of Environmental Management, the Rhode Island Department of Motor Vehicles, and SysTech International have partnered together to create the RI2008 Emissions Inspection Analyzer System that quickly and accurately measures vehicle emissions.

Rhode Island Vehicle Inspection Program

The Rhode Island Vehicle Inspection Program (RI2008) equipment and Vehicle Information Database (VID) host computer system are designed according to EPA guidance documentation, EPA final rule making, and according to specific requirements defined by the Rhode Island Department of Environmental Management's (DEM) operating policies and procedures for the State of Rhode Island Vehicle Inspection Program. RI2008 inspections are used to determine pass/fail outcomes for all vehicles subject to the Rhode Island Vehicle Inspection Program.

The Rhode Island Department of Environmental Management has implemented revised policies and procedures and new, state of the art technology to update the vehicle inspection program.

Types of Vehicles Inspected

There are many types of motor vehicles that could be inspected – from tractor lawnmowers to semi trucks – but your inspections will include only those vehicles that meet the following criteria:

- Street operated vehicles
- Engine size at least 0.5 liters (L) and not more than 17.0 liters
- Diesel, gasoline, LPG, and CNG-fueled vehicles, including hybrid electric/fuel vehicles
- Model year within the non-exempt range

RI2008 Emission Analyzer System

Your RI2008 Analyzer System includes the following components:

Analyzer Cabinet & PC

The analyzer cabinet contains the PC (computer) and hardware needed for conducting vehicle inspections. Devices include the analyzer computer, bar code reader, monitor/screen, keyboard, mouse, gas analyzer/bench sampling system, OBDII link, RPM measuring devices, etc. These devices all work together to support the vehicle inspection process.

Sample Probe and Hose

The sample probe and hose attached to the analyzer's gas sampling system is placed in the vehicle's tailpipe when needed for tailpipe emissions inspections. It is not needed for OBDII inspections.

RPM Measurement Devices

The RI2008 system includes multiple RPM measurement devices to assist you in the vehicle inspection process. Inspections requiring RPM measurement provide an RPM measurement setup screen to assist you in determining the best option for RPM measurement on the current vehicle under test.

OBDII Connector

The OBDII connector link is provided for inspection of applicable vehicles. In the RI2008 program, the OBDII test is applicable to model year 1996 and newer non-diesel power vehicles under 8,500 lbs GVWR and 1997 and newer diesel vehicles under 8,500 lbs GVWR. During OBDII inspections, the OBDII link is connected to the vehicle's DLC (diagnostic link connector) to obtain the vehicle's status. The RI2008 analyzer software includes a DLC locator tool with extensive information and vehicle-specific photos to assist you in locating the DLC on different vehicles. The RI2008 analyzer applies advanced vehicle look-up and OBDII inspection methods to reduce the inspection time by connecting the OBDII link to the vehicle at the very beginning of the inspection process. Refer to ***Chapter 3 Test (Vehicle Inspection)*** for details.

Sticker and VIR Printer

The analyzer system includes a printer for Sticker and Vehicle Inspection Report Printing.

> **Note**
>
> Ensure you load Sticker stock properly to avoid damage to costly preprinted stock paper.

Vehicle Inspections

An RI2008 emissions inspection is comprised of one of the following emissions tests:

- OBD II (On-Board Diagnostics)
- Dynamometer
- TSI (Two-Speed Idle)

- Diesel Opacity

The RI2008 Analyzer System software automatically selects the applicable test for inspection of each vehicle. Factors such as model year, fuel type, vehicle type, and others aid the software in determining its choice of emissions test for the test vehicle. In each case, RI2008 Analyzer System software receives its information from the data you enter and/or from the RI2008 emissions inspection network's Vehicle Information Database (VID).

To help you in understanding the RI2008 emissions inspections, each emissions test is described below.

OBDII Test

An OBDII (On-Board Diagnostics II) emissions test is usually the first choice for an emissions test for all 1997 or newer light-duty diesel fueled vehicles, and 1996 or newer non-diesel fueled vehicles. The advantage of the OBDII test over the tailpipe inspection is that it's relatively quick and easy to perform – there's very little setup involved. The down side is that it may occasionally be difficult or impossible to access the OBDII connection on some vehicles. In addition, the vehicle must be fairly modern (1996 or newer) to be able to take an OBDII test.

When a vehicle emits high levels of emissions, it is usually a sign that certain systems in the vehicle are not operating correctly or optimally. The test vehicle's on-board computer monitors the key components of these systems, not only when the engine is running, but also anytime the ignition is turned on. If any of the readings indicate sub-par performance, the OBD computer sets a flag, or code, which the RI2008 Analyzer System checks during an emissions test.

Dynamometer Test (Transient)

For vehicles that are not subject to an OBDII inspection, the Transient (loaded mode) dynamometer inspection applies. Four wheel drive vehicles and vehicles with traction control cannot be tested on the dynamometer and a TSI test is required. The Dynamometer inspection consists of driving the vehicle on the dynamometer, following the speed trace on the analyzer screen with the tailpipe test probe in the exhaust and the VMAS 4" exhaust tube and conical collector in place. Two conditioning cycles are performed to warm up the vehicle and then a test cycle is performed where the exhaust gas is measured. The RI2008 Dynamometer test measures hydrocarbon (HC), carbon monoxide (CO), and carbon dioxide (CO2) and Nitrogen Dioxide (NOX) emissions to ensure a valid exhaust gas sample and to determine the pass/fail status of the vehicle in the loaded mode.

Two-Speed Idle Test (TSI)

For gasoline vehicles that are not subject to an OBDII or a dynamometer inspection, the TSI (two-speed idle) inspection applies. The TSI inspection consists of one or more test modes performed at a designated engine speed. For example, the typical TSI test will include one mode performed at a higher RPM (around 2500) for a certain number of seconds, followed by another mode performed at a lower RPM (around 1100) for a certain number of seconds. Depending on the exact vehicle and the result of each mode, the TSI inspection will vary. For example, it may include an additional high speed mode to condition a vehicle, or it may include a key-off sequence on certain makes/models of vehicles.

The RI2008 TSI test measures hydrocarbon (HC), carbon monoxide (CO), and carbon dioxide (CO2) emissions to ensure a valid exhaust gas sample and to determine the pass/fail status of the vehicle.

Diesel Opacity Test

For diesel vehicles that are not subject to an OBDII inspection, the Diesel Opacity inspection applies. The diesel inspection consists of a dynamometer test where the vehicle is brought up to speed and maintained at a constant speed until the opacity test is performed. The RI2008 Diesel Opacity test measures the opacity (density) of the smoke in the exhaust with the vehicle at speed and loaded by operating on the dynamometer. OBDII diesel vehicles are tested in the same manner that applies to gasoline OBDII vehicles.